100 YEARS AGO

The author of the alleged discovery in this instance is Dr. Waltemath, an astronomer of Hamburg, and his assertion is, that there is evidence of the existence of a second moon, circling about the earth, but with such low reflective power that it has usually escaped observation even when in opposition. The author has perceived the desirability of making this hypothetical moon do a useful work in celestial mechanics, by explaining that the difference between the observed and computed secular acceleration of the moon's mean motion arises from the action of the newly discovered body. … It is, of course, quite possible that Dr. Waltemath fully believes in the existence of this object. In that case we should say, he is the only person who does; for when we ask on what kind of observation does this very accurate orbit rest, we find that the author has employed that large collection either in which persons have believed that they have seen objects of doubted value transiting the sun, whether bright or dark. He seems to have trusted to those wild and reckless assertions that are made from time to time about "ruddy fireballs" or "night suns," or other vague descriptions, and on such loose and inaccurate data he has unfolded his strange and wondrous tale.

From *Nature* 24 February 1898.

50 YEARS AGO

The Cantor Lecture before the Royal Society of Arts, delivered on January 20 by Dr. C. H. Andrewes, of the National Institute for Medical Research, is an admirable summary of the essential features of our knowledge of that world-wide scourge, the common cold; and nobody is better fitted than Dr. Andrewes to state what we know and what we do not know about it. … If, as Dr. Andrewes showed, those who are working on this problem in Great Britain and other countries are only beginning to pick up clues to the solution of what is one of the most complex problems of virology, there is plenty of evidence that this relative ignorance will not persist for very long. All the portents, indeed, suggest that presently the common cold, like typhus, typhoid, cholera, smallpox, yellow fever and other plagues, will have yielded to human domination.

From *Nature* 28 February 1948.

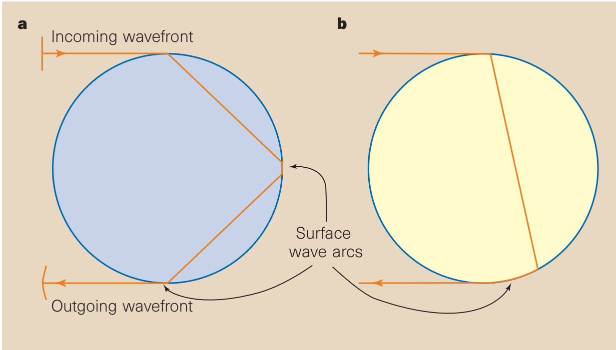

Figure 2 **Ray diagrams of the principal contributions to the optical glory:** a, **a small, spherical drop of water (refractive index 1.33), and** b, **a dielectric sphere made of alumina (refractive index of 3.12). Time-resolved experiments show that the optical glory comes from surface waves that take a short-cut through the sphere.**

arated from the weaker (and less interesting) direct reflections, and the spectrum of the glory could be isolated. The measured spectral contributions were consistent with theoretical models that attribute glory backscattering to the superposition of surface waves.

For the sphere investigated, the refractive index of 3.12 is much greater than the optical refractive index of water, which is close to 1.33. Consequently, the glory ray viewed had only one short-cut (Fig. 2b), which differs from visible glory rays for water droplets (Fig. 2a), but the confirmation of theory is no less valid for that.

The measurements were taken at a backscattering angle of 11°, which is offset from the most highly focused part of the scattering. If the technique can be extended to the brighter on-axis backscattering, details of the time evolution of the surface-wave coupling process could be explored. The effects of changing the shape of the scatterer[5–7] could also be investigated. In nature, after all, drops typically lack the symmetry of a perfect sphere. □

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Ecology

Kiss of death

What do the Denver Broncos have in common with a tiny beetle larva? A clue can be found in *Proceedings of the National Academy of Sciences* (95, 1108–1113; 1998), where Thomas Eisner and colleagues describe a cunning mechanism that is used by larvae of the phengodid beetle to evade the chemical defences of millipedes larger than themselves — and then kill them.

Millipedes deter predators by squirting a toxic fluid from defensive glands found along the length of their bodies, apart from the first five segments and the last. Nevertheless, they are routinely eaten by phengodid larvae. First the worm-like larva coils its body around the front of the millipede, embedding its mouth parts in the millipede's neck and somehow immobilizing it. Then the larva retires underground before reappearing to consume the soft inner tissues, leaving only the skeletal parts and glandular sacs uneaten.

How does the larva do this? By staging encounters between a phengodid larva (*Phengodid laticollis*) and the millipede (*Floridobolus penneri*), Eisner and colleagues have found the answer — in piercing the millipede with its sickle-shaped mandibles, the larva delivers a lethal injection of regurgitated gastric fluid. Moreover, the millipede fails to discharge its defensive glands during the attack, and the authors found that the discarded glands of dead millipedes contain similar levels of benzoquinone toxins to their live counterparts.

So back to American football. The answer, of course, is that the Broncos and the beetle have both found a way to defeat more powerful opposition, coming away with — respectively — the superbowl and supper.

Alison Mitchell

T. EISNER